

On the genus Camptonyx.

M. P. Fischer, in the 'Journal de Conchyliologie' for June 1859, gives the genus *Camptonyx*, Benson, as a synonym of *Valenciennesia*, Rousseau, and includes the recent Kattiwár species, *C. Theobaldi*, as a second form of that genus.

M. Fischer could not have consulted the original paper in the 'Annals' for May 1858; otherwise he would have observed that the relations of *Camptonyx* with the fossil *Valenciennia* had been previously noticed, and that the different positions of the siphonal channels had been relied on as sufficient to prevent their union.

M. Fischer has attributed *Campt. Theobaldi* to Cochin China, while quoting the true habitat, "sur la péninsule qui sépare les Golfes de Kutch et de Cambay." The locality of this peninsula, between Bombay and the mouths of the Indus, will serve the views of M. Fischer still better than the remote station which he has erroneously assigned to the recent shell.—W. H. B.

September 26, 1859.

Anatomical and Physiological Investigation of the Pleurobranchus aurantiacus. By M. LACAZE-DUTHIERS.

Digestion.

Mouth protractile into a trunk; lingual bulb containing three corneous pieces: one median, comb-like, in consequence of the accumulation of an immense number of small sharp lamellar teeth; and two in the form of laterally symmetrical plates, covered with small points regularly arranged like the teeth of a file.

Œsophagus long. *Stomach* simple, large, placed on the left side. *Intestine* short, without convolutions, scarcely flexuous, opening on the right side behind the branchia.

Accessory glands.—*Liver* voluminous, blackish, its excretory canals opening at the union of the stomach and intestine, formed of cæca with cellular contents, often occupied by calcareous calculi or calculi of some other nature, probably biliary, usually of a dark tint.

Two kinds of salivary glands, one of which, not yet described, as far as I know, is placed upon the dorsal face of the pedal disk, that is to say, upon the lower floor of the visceral cavity, and opens by a single canal between the trunk and the tongue; it is formed of large cæca, clothed with a cellular tissue of very large cells. The other salivary glands are identical with those of other Mollusca, except that their position is different, their parenchyma being intermixed with the liver.

Circulation.

The study of this is most important. The *venous circulation* is lacunar in the highest degree. The tissue of the animal swells up like a sponge; great venous tissues, irregular around the stomach, circular at the base of the foot and of the dorsal tegumentary lobe, conduct the blood, on the one hand to the branchia, on the other to the branchial vein, near its union with the auricle.

Heart transverse and dorsal. *Arterial circulation* analogous to that presented by the other Mollusca.

The *external orifice of the apparatus of circulation*, placed above the generative apertures upon the right side before the branchial vein, in the form of a button-hole, is only visible in dead and much-softened animals. It disappears with the greatest facility amidst the wrinkles produced by the contractions. It communicates with a canal which opens into the vein coming from the branchia, in front of the auricle. The internal opening of this canal into the vein is oblique, and placed upon a falciform fold directed towards the heart, which may evidently play the part of a valve.

All injections, whatever be their nature, or the means by which they are propelled, reach the heart by this orifice from the exterior.

The external orifices of the circulation have not been remarked and well determined upon the integuments of any of the Mollusca, except the *Dentalia* and *Pleurobranchi*. In these examples ruptures cannot have been taken for orifices. I hope to be able to generalize this fact, not by considerations independent of observation, but by anatomical data, which everything leads me to think accurate. I should mention that Gegenbaur, Leuckart, and Langer have already indicated relations between the circulatory apparatus and the exterior, by the intermediation, however, of the *corpus Bojani* either directly or through the pericardium in the Pteropoda and Acephala. We have this fact now demonstrated also in the Gasteropoda.

It is evident, if we come to the generalization of these facts, that the ideas we have of the nutrition of animals, taking the higher creatures as our type, must be modified for the Mollusca; and the circulation in this group will no doubt present itself in quite a new light.

Nervous System.

Three ganglionic centres, as in the other Mollusca. The supra-oesophageal and pedal ganglia very distinct, forming a collar. The right postero-lateral ganglion (the same designated by authors by different names, such as pallio-splanchnic, genito-respirator, &c.) very small, placed close to the collar on the right side.

This last centre furnishes two very slender nerves, of which one passes to the generative organs, the other to the branchia.

From the *pedal centre* the nerves of the foot arise. The otolithes are applied against it.

From the *supra-oesophageal centre* arise the nerves of the tentacles, of the supra-buccal velum, of the trunk, the eyes, and the dorsal tegumentary lobe. The two latter are very voluminous. One of them, that of the right side, gives off very distinct filaments to the branchia. It appears, therefore, that the right postero-lateral ganglia, called respiratory ganglia by some authors, are not the only ones that preside over the function of respiration.

The *great sympathetic nerve* is well developed, arises by two origins from the supra-oesophageal ganglia, forms two ganglia under the oesophagus, and is distributed over the digestive tube and the

lingual apparatus. The trunk and the tongue are thus clearly distinguished by the nature of the nerves which animate them.

Reproduction.

Hermaphroditism; fundamental and accessory glands, as well as the other parts, analogous in structure and arrangement to those found in most Gasteropoda.

Special Secretions.

The skin is filled with triangular spicula, or with oval calcareous particles. The latter occur (although in form less regular than in the skin) in the walls of the digestive tube, and even in the neurilemma of the nerves.

The *corpus Bojani* is placed to the right of the mass of the viscera, and is entirely internal; it turns under the branchia by a distinct pore, which is easily seen. This forbids the supposition which might perhaps be raised, that the excretory pore of the *corpus Bojani* has been mistaken in this case for the internal orifice of the circulation. In *Pleurobranchus testudinarius* I have met with numerous calculi in the interior of its tissue. With nitric acid and ammonia they gave the well-known purple-red colour characteristic of uric acid. This is a fresh proof, in addition to so many others, that this body may be regarded as a kidney.—*Comptes Rendus*, June 27, 1859, p. 1155.

Note on *Cyclostoma articulatum*. By S. P. WOODWARD, F.G.S.

This land-snail is peculiar to the Island of Rodriguez, and belongs to the subgenus *Tropidophora* (Troschel), characteristic of the Mascarene Islands. Numerous examples were collected in February 1858 by the late Madame Ida Pfeiffer, who conveyed them to the Mauritius, where they continued active, but took no food during a stay of two months. Three individuals remained alive after the voyage to England, which occupied ten weeks; and several others were sufficiently preserved for examination. They were brought over packed in paper and rags, in a tin pot with a lid, and were not taken out until a fortnight after their arrival. One of these snails lived for some months under a bell-glass with moss and ferns, and afforded frequent opportunities for examination. The animal was of a pale buff colour, with darker tentacles and muzzle; the tentacles were acute, rugose, and slightly annulated; the muzzle annulated, grooved beneath, and bilobed at the end, which was constantly used in walking. The foot was ample, with a deep central groove dividing it into two lateral elements moved alternately in walking. When it retired and closed its shell, it still adhered, and sometimes became suspended, by a tenacious thread of mucus.

Madame Pfeiffer also brought home specimens of *Cyclostoma carinatum* and *C. (Otopoma) Listeri*, from Mauritius, which were in a tolerably fresh state. The lingual dentition of these species differs slightly from that of *C. articulatum*.—*Proc. Zool. Soc.* May 24, 1859.